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CLEAN VERSION OF ALL CLAIMS

1. An isolated nucleic acid sequence which encodes a polypeptide with desaturase activity, selected from the following group:

- a) a nucleic acid sequence with the sequence shown in SEQ ID NO: 1,
- b) nucleic acid sequences which, as a result of the degeneracy of the genetic code, are derived from the nucleic acid sequence shown in SEQ ID NO: 1,
- c) derivatives of the nucleic acid sequence shown in SEQ ID NO: 1 which encode polypeptides with the amino acid sequences shown in SEQ ID NO: 2 and which have at least 75% homology at amino acid level without substantially reducing the enzymatic activity of the polypeptides.

2. An amino acid sequence encoded by a nucleic acid sequence as claimed in claim 1.

3. An amino acid sequence as claimed in claim 2, encoded by the sequence shown in SEQ ID NO: 1.

4. A nucleic acid construct comprising a nucleic acid sequence as claimed in claim 1, where the nucleic acid sequence is linked to one or more regulatory signals.

A'
5. (amended) A vector comprising a nucleic acid sequence as claimed in claim 1 or a nucleic acid construct comprising said

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nucleic acid sequence linked to one or more regulatory signals.

A1
consider
6. (amended) An organism comprising at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals.

7. An organism as claimed in claim 6, which is a plant, a microorganism or an animal.

A2
8. (amended) A transgenic plant comprising a functional or nonfunctional nucleic acid sequence as claimed in claim 1 or a functional or nonfunctional nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals.

9. (amended) A process for the preparation of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.

10. (amended) A process for the preparation of triglycerides with an increased content of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals into

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an oil-producing organism, growing this organism and isolating the oil contained in the organism.

A² could
11. (amended) A process for the preparation of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.

12. (amended) A process for the preparation of triglycerides with an increased content of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.

13. (amended) A process as claimed in claim 9, wherein the unsaturated fatty acids have an increased calendulic acid content.

14. (amended) A method as claimed in claim 9, wherein the organism is a plant or a microorganism.

15. An unsaturated fatty acid prepared by a process as claimed in claim 9.

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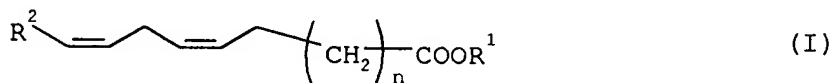
16. A triglyceride with an increased content of unsaturated fatty acids prepared by a process as claimed in claim 10.

17. A saturated fatty acid prepared by a process as claimed in claim 11.

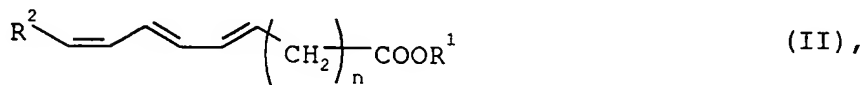
18. A triglyceride with an increased content of saturated fatty acids prepared by a process as claimed in claim 12.

19²⁰ (amended) A method for isolating a genomic sequence comprising homology screening with the nucleic acid sequence as claimed in claim 1 or a fragment thereof.

20²² An enzyme which converts a fatty acid of the structure I,



NE which has two double bonds separated from each other by a methylene group, to give a triunsaturated fatty acid of the structure II,

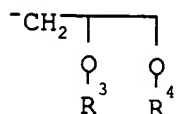


the three double bonds of the fatty acid being conjugated and the substituents and variables in the compounds of the structures I and

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II having the following meanings:

R^1 = hydrogen, substituted or unsubstituted, unsaturated or saturated, branched or unbranched C_1 - C_{10} -alkyl-,



R^2 = substituted or unsubstituted, unsaturated or saturated C_1 - C_9 -Alkyl-

R^3 and R^4 independently of one another are hydrogen, substituted or unsubstituted, saturated or unsaturated, branched or unbranched C_1 - C_{22} -alkylcarbonyl or phospho-,

$n = 1$ to 14 .

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MARKED-UP VERSION OF AMENDED CLAIMS

Cancel claims 19 and 21. ^{NE}

5. (amended) A vector comprising a nucleic acid sequence as claimed in claim 1 or a nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals.

6. (amended) An organism comprising at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals.

8. (amended) A transgenic plant comprising a functional or nonfunctional nucleic acid sequence as claimed in claim 1 or a functional or nonfunctional nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals.

9. (amended) A process for the preparation of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.

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10. (amended) A process for the preparation of triglycerides with an increased content of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.

11. (amended) A process for the preparation of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.

12. (amended) A process for the preparation of triglycerides with an increased content of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct [as claimed in claim 4] comprising said nucleic acid sequence linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.

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13. (amended) A process as claimed in claim 9 [or 10], wherein the unsaturated fatty acids have an increased calendulic acid content.

14. (amended) A method as claimed in [any of claims 9 to 12] claim 9, wherein the organism is a plant or a microorganism.

20. (amended) [The use of a nucleic acid sequence as claimed in claim 1 or of a fragment thereof] A method for isolating a genomic sequence [via] comprising homology screening with the nucleic acid sequence as claimed in claim 1 or a fragment thereof.